by modern writers; I except Fabricius's description, which is admirable.

Disco harbour and Waigat Strait. Only two or three specimens could be found.

Clione borealis has a wide range as regards longitude, from Novaya Zemlya to the eastern coasts of North America. It is said to abound in arctic seas during the summer and autumn, and to be the principal food of the right whale.

It is the *Clione papilionacea* of Pallas, *Clio limacina* of Phipps, *Clio retusa* of Müller and Fabricius (not of Linné), and *Clio Miquelonensis* of Rang. The date of publication by Pallas and Phipps is the same. *Clione borealis* was first noticed and figured by Martens in his voyage to Spitzbergen and Greenland, under the name of the "Sea May Fly."

Since the publication in the 'Annals' of my former papers on this subject I have had some additional information, and become aware of a few slight omissions, which enable me to add a short supplement.

Montacuta Dawsoni. Newfoundland (Verkrüzen).

Kellia symmetros. A single valve, much larger than the specimen which I have described, was procured by Mr. Friele in the recent Norwegian Expedition at a depth of 488 fathoms.

Cadulus tumidosus. A small variety was dredged in West Norway by Professor G. O. Sars, who considers it a distinct species, and proposes to name it *propinquus*.

Trochus umbilicalis. Cape York, 10 fms., and Port Kennedy (Walker).

Rissoa castanea. White Sea (Middendorff).

Turritella erosa. Syn. *T. polaris* (Beck), Möller.

Turritella reticulata. Melville Bay, 80–100 fms. (Walker).

Odostomia albula. Gulf of St. Lawrence, 20 fms. (Whiteaves).

I have now fulfilled my pledge to the Royal Society with respect to the Mollusca of the 'Valorous' Expedition.

XXXIII.—*Notes on New-Zealand Ichthyology.*

By James Hector, F.R.S., C.M.Z.S.

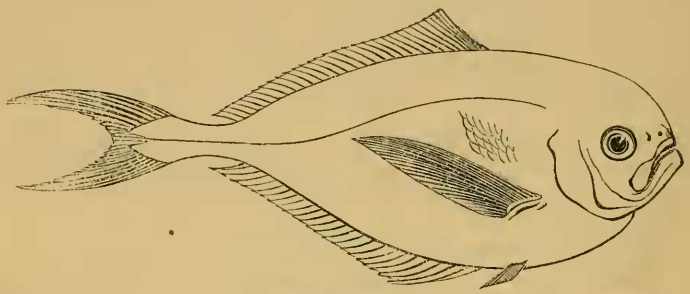
Brama squamosa. C.M.

Toxotes squamosus, Hutton, Trans. New-Zealand Inst. viii. p. 210.

D. 3–35. V. 2–29.

The type of the above was presented to the Colonial Museum

by W. T. Travers, F.Z.S.; but the second fresh specimen now figured shows that it must be referred to the genus *Brama*, on account of its general oval form, its subulate acute teeth, with a stronger second row in the lower jaw, long dorsal fin extending forwards to over vertical of the pectorals and ventrals, with three short spines confluent with the soft dorsal, which, as also the anal, is enveloped in dense scuta, its moderate, very oblique, almost vertical gape and dilated maxillary, doubly excised; caudal fin with elongate acuminate lobes.



Brama squamosa.

The genus *Brama* has been transferred in Dr. Günther's work from the order Squamipinnes to the Scomberoids; and it was probably the scaly vertical fins of this fish which induced Capt. Hutton to seek for its allies among the former order. As a species it differs very little from Ray's Brama (*Brama Raii*, Cuv.).

a. Dried specimen. Cook's Strait (Tylor), 1875.

b. Fresh specimen, stuffed. Wellington Harbour, 1875. Total length 19 inches.

Upeneichthys Vlamingii (Cuv. and Val.). C.M.

(Red Mullet.)

D. 1 | 7–9. A. 1 | 6. L. l. 29. L. t. $\frac{2}{6}$.

Length thrice and two thirds the height, which equals the length of head. Scales twice the vertical diameter of the eye, which is one third the length of snout; first dorsal less in length of base than the second by the diameter of the eye; base of second dorsal, length of pectoral, and ventral each equal to length of head. First dorsal spine less than the diameter of eye; second equal to length of head. Barbels reach nearly to the vertical from the extremity of the operculum.

Upper part of body dusky violet, variegated with yellow

and azure blue, blending into pale crimson with golden and azure-blue streaks on lower part of body. Head with blue streaks descending on the snout. Fins brownish purple, with varied markings of pink, yellow, and azure blue, the latter being distinct, and the two former blending into the ground-colour; each scale with a violet patch in the centre. Iris golden yellow. Two silvery streaks; and a granulated patch below the eye. No black bands on the side of the body

Teeth of jaws minute, in a double row, with some slightly stronger teeth in front of upper jaw. No palatine teeth. Young with three teeth on each side in distinct patches.

In the coloration, general form, and divided vomerine teeth, this fish is very similar to *Upenoides Vlamingii*, but the absence of teeth on the palatine bones places it in Blecker's genus *Upeneichthys*. Distinguished from *U. porosus* of the Australian seas by the absence of any black lateral streak.

Specimen (in spirit) from outside Wellington Harbour. Total length 16 inches.

Beryx affinis, Günth. Cat. i. 13. C.M.

D. 7 | 12. A. 3 | 12. V. 1 | 7. L. l. 44. L. t. 6 | 12.

Height equal to length of head and one third total length. Operculum with two spines. Pectoral is one fifth the total length. Eye situated high, its diameter being one fifth the length of the head, and exceeding that of the snout; two nasal apertures close in front, the posterior being the larger. Intermaxillaries carry fine teeth on the sides and a group of large teeth on each side of a mesial notch, into which a projecting group of large teeth on the lower jaw fit.

Colour crimson pink, paler beneath.

A dried specimen collected by Mr. Robson at Cape Campbell; total length 18 inches. This fish agrees well with Dr. Günther's species, of which he gives a very minute description in the work above quoted. It inhabits also the coast of Australia.

Dinematichthys consobrinus, Hutton.

Capt. Hutton's type is in the Colonial Museum. He does not mention the presence of two minute spines in front of the dorsal. If these are present in the other specimens, the genus will have to be placed in the curious intermediate family of

Gadopsidæ. In the Cat. Col. Mus. 1870, I recorded the occurrence of *Gadopsis marmoratus* in New Zealand ; but it has dropped out of subsequent lists, being only represented in the collection by a drawing made of a specimen got on the east coast.

XXXIV.—*Observations on the* Coccosphere. By G. C. Wallich, M.D., Surgeon-Major Retired List H.M. Indian Army.

[Plate XVII.]

The history of what may be termed the Coccosphere question is a remarkable one. Seventeen years ago I pointed out, as the result of actual observation, that the "coccoliths," which had been discovered three years previously by Professor Huxley in soundings from the Atlantic, are not independent structures, but merely cast-off appendages of the Coccosphere-cell. Yet, from that period to the present, the physiological relation existing between these two integral portions of one and the same organism has remained shrouded in mystery. Since 1868 a number of elaborate observations have been published, both here and abroad, on the characters and supposed affinities of the various forms of "coccolith." But, unfortunately, the value of these observations has been materially diminished, owing to their being based on one or other of the following essentially fallacious assumptions :—namely, that the "*coccolith*" itself is a "cell;" that it is an independently developed and independently living structure; and that, as a "*coccolith*," it is capable of taking part in any subsequent vital combination.

These assumptions have possibly had their origin in two statements made by Prof. Huxley :—the first, in 1858*, that "*coccoliths* somewhat resemble single *cells* of the plant *Protococcus*;" the second, ten years later, namely in 1868†, that the varieties of "*coccoliths*" named by him "*Discoliths* and *Cyatholiths* stand in the same relation to the protoplasm of *Bathybius* as the *spicula* of sponges or of *Radiolaria* do to the soft parts of these animals." It is true that in the same paper Prof. Huxley noticed three alternative "possibilities" in relation to the *cocco-*

* 'Deep-sea Soundings in the North Atlantic,' made in H.M.S. 'Cyclops,' Commander Dayman, in 1875. Appendix, Report on Soundings, by Prof. Huxley, p. 64.

† "On some Organisms living at Great Depths in the North Atlantic Ocean," by Prof. Huxley, F.R.S., 'Quart. Journ. Microsc. Science,' Oct. 1868, p. 210.